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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,160	04/08/2004	Shinsuke Takeguchi	43888-296	7038

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EXAMINER

ONEILL, KARIE AMBER

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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01/25/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/820,160	TAKEGUCHI ET AL.	
	Examiner	Art Unit	
	Karie O'Neill	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 10-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9-16-04, 4-8-04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (Claims 1-9) in the reply filed on November 5, 2007, is acknowledged.

Claims 10-18 have been withdrawn from consideration as being drawn to a non-elected Group. Therefore, Claims 1-9 are pending in this office action.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) or (f), which papers have been placed of record in the file.

Information Disclosure Statement

3. Information disclosure statement (IDS), submitted April 8, 2004 and September 16, 2004, has been received and considered by the examiner.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 and 3-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshimoto et al. (US 20030104265 A1).

With regard to Claim 1, Yoshimoto et al. discloses in Figures 1-2 and 5, a polymer electrolyte fuel cell (5, D) comprising a cell stack (2, E) including a hydrogen ion conductive polymer electrolyte membrane (A), a pair of electrodes (B,C) sandwiching said membrane and a pair of conductive separators (H), one of which has a gas flow channel for supplying and exhausting a fuel gas to and from one of said electrodes and the other has a gas flow channel for supplying and exhausting an oxidant gas to and from the other electrode (paragraphs 0003-0004 and 21-0022). Yoshimoto et al. discloses in Figures 1 and 2, wherein at least one of said gas flow channels (1a) is connected to an inlet manifold (6) at a junction, wherein the lowermost part of said junction is positioned above a gas supply pipe (6a) connected to said inlet manifold (6) (paragraph 0023).

With regard to Claim 3, Yoshimoto et al. discloses in Figure 2, wherein said inlet manifold (6) has a vertically oriented cross-section.

With regard to Claim 4, Yoshimoto et al. disclose in Figure 2, wherein a junction of gas supply pipe (6a) with said inlet manifold (6) is positioned below the center of the inlet manifold (6). This can be seen in Figure 2 where the supply pipe (6a) is located at the bottom portion of the manifold (6) and the flow channels (1a) are located at the top portion of the manifold (6).

With regard to Claim 5, Yoshimoto et al. discloses in Figure 6, wherein said at least one of said gas flow channel is connected to an outlet manifold (K), which has a

gas exhaust pipe connection (L), and wherein the junctions of said gas flow channel and said gas exhaust pipe (L) with said outlet manifold (K) are positioned in a lower part of said outlet manifold (paragraph 0004).

With regard to Claim 6, Yoshimoto et al. discloses in Figure 3, wherein said inlet manifold (6) has a constriction, a point at which the manifold curves around a cylindrical/tubular piercing member (4), between said gas supply pipe (6a) connection and said lowermost part of said gas flow channel connected. The gas flow into the manifold (6) is flow-regulated because a flow passage is narrowed by the piercing member (4), and because of this, gas dispersion is promoted in the manifold (6) and the gas distribution/supply of gas to each cell is unified (paragraph 0026).

With regard to Claims 7-8, Yoshimoto et al. discloses in Figure 1, wherein said gas supply pipe (6a) is extended into said inlet manifold (6) and an extended part of said gas supply pipe (6a) which can be seen extending from the end plate(3) has at least one hole at the end of the pipe.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimoto et al. (US 20030104265 A1), as applied to Claims 1 and 3-8 above, and in further view of Sugita et al. (US 6,723,463 B2).

Yoshimoto et al. discloses the polymer electrolyte fuel cell in paragraph 5 above, but does not disclose wherein at least one gas flow channel has a serpentine configuration which is arranged substantially parallel to gravity.

Sugita et al. discloses a fuel cell stack (1) formed with a plurality of fuel cell units (2) stacked together in a horizontal direction, each of the fuel cell units comprising a solid polymer electrolyte membrane, an anode electrode, a cathode electrode and a pair of separators (17) which hold the anode and cathode electrodes (column 1 lines 44-58). The surface (17a) of the separator (17) is provided with grooves for gas flow and communicating with gas supply port (25a) and gas exhaust port (25b). The grooves together form a serpentine shape with one and a half alternating turns in the surface of the separator (column 6 lines 21-31). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a separator having grooves or flow channels with a serpentine configuration in the fuel cell of Yoshimoto et al., because Sugita et al. teaches the gas traveling along longer passages as compared to the case in which passages are horizontally formed parallel to the long side of the separator and, therefore, the gas can be effectively utilized and a high power generation efficiency can be obtained (column 6 lines 47-53).

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimoto et al. (US 20030104265 A1), as applied to Claims 1 and 3-8 above, and in further view of Kumata et al. (US 4,508,793).

Yoshimoto et al. discloses the polymer electrolyte fuel cell in paragraph 5 above, but does not disclose wherein said extended part of said gas supply pipe has a plurality of holes in the top thereof, which are spaced apart at decreasing intervals inwardly.

Kumata et al. discloses a fuel cell system with an air chamber (30) having air pipes (45) arranged in the air chamber, parallel to a peripheral face of the substack, and at the air inlet manifold (17a) to feed air uniformly into the air channels (column 6 lines 60-68). The air pipes (45) have a row of air blow holes (46) along its length (column 7 lines 1-4). The diameter of the air blow holes (46) are is reduced step by step from the open end to the closed end within the range of 7 to 12 mm (column 7 lines 17-26).

Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a gas supply pipe having a plurality of holes spaced apart at decreasing intervals inwardly in the fuel cell of Yoshimoto et al., because Kumata et al. teaches the arrangement of spaced apart holes allows the gas to be introduced into the channels uniformly, thus making it possible to prevent the fuel cell system from deterioration of characteristics due to ununiform flow of the gas (column 7 lines 56-65).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill whose telephone number is (571) 272-

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8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Karie O'Neill
Examiner
Art Unit 1795

MARK RUTHKOSKY
PRIMARY EXAMINER
Mark Ruthkosky
1.20.2008

KAO